



LEVEL 1 2 3 4 5

Keeping Babies Warm

THE LEARNING CONTEXT

The teacher's intended outcomes were for the students to:

- plan an investigation to answer a question
- explain how physical properties of materials can be used by humans.

The intended outcomes were aligned to the following "big ideas":

- Scientists plan carefully designed investigations to answer their questions.
- Physical properties of a material determine how that material might be used.

This class was involved in a "making things / developing systems" type investigation based around a socio-historical scenario. Their task was to use a planning board to plan an investigation into finding out which type of flax would help keep a baby warm and dry.

As an exploratory activity the teacher gave the students a starter sheet which asked them to:

- Think about the product you have been asked to make.
- Think about where the flax fibres would have been put in the basket and why a baby would have been placed in a tightly woven basket.
- Consider what properties the flax fibres need to have.
- List all the properties you can think of, and choose one important property to investigate.
- Mark the selected property with an asterisk (see Andy's answer).

The students identified the different types of flax. They visited the flax stripping mill and the waka (canoe) house to explore the uses of flax. They were taught how to use the planning board, and learnt the protocol for harvesting the flax. They planned and carried out a variety of investigations on the effect of soaking flax in various liquids, the effect of different drying times for flax and, the area of the leaf where the best fibres are found.

Using their knowledge of the flax fibres the students planned and carried out an investigation to find out which was the best flax fibre to help keep a baby warm and dry. The student tasks were:

- Task 1:** Draw what you think the baby and basket will look like when the baby is in the basket. Add labels.
- Task 2:** List properties the muka (flax fibres) would need to have. Asterisk the most important to investigate.
- Task 3:** Plan the investigation using the "planning board".

Teacher-student conversation

Discussing Andy's drawing:

- Teacher: What does your drawing [baby in the basket] show?
Andy: My drawing shows the baby warm and comfortable, the basket has fibres with access to the air, and it's portable as well.
- Teacher: What properties have you identified that the flax fibres will need to have, and which one will you investigate?

Andy: Warmth, because it's the most important aspect for the baby's health. I'm looking for the flowing properties in the fibres: warm, durable, didn't break up, supple not rigid, and strong.

WHERE TO NEXT?

To move Andy to the next learning step, the teacher help him focus on:

- investigating the features of types of flax fibres to keep the baby warm.(investigating in science)
- the key concepts of heat, temperature, and insulation. (developing and communicating scientific understanding).

The teacher could do this by asking him to:

- plan an investigation without the use of a planning board (investigating in science)
- practise "prediction making" by justifying his thinking when making predictions(developing and communicating scientific understanding).

CURRICULUM LINKS

Science in the New Zealand Curriculum
Achievement Objectives

Level 4: Making Sense of the Material World

Students can investigate and explain how uses of everyday materials are related to their physical and simple chemical properties.

Science in the New Zealand Curriculum, page 96
http://www.tki.org.nz/r/science/curriculum/p96_97_e.php

Level 4: Developing Scientific Skills and Attitudes

Focusing and planning: Students can use their science ideas and personal observations with those of others to make testable predictions or to identify possible solutions for trialling.

Science in the New Zealand Curriculum, page 44
http://www.tki.org.nz/r/science/curriculum/p44_51_e.php

Level 4: Making Sense of the Nature of Science and its Relationship to Technology

Students can investigate examples of simple technology to clarify some scientific ideas.

Science in the New Zealand Curriculum, page 32
http://www.tki.org.nz/r/science/curriculum/p32_33_e.php

REFERENCE

Ministry of Education (1993). *Science in the New Zealand Curriculum*. Wellington: Learning Media.



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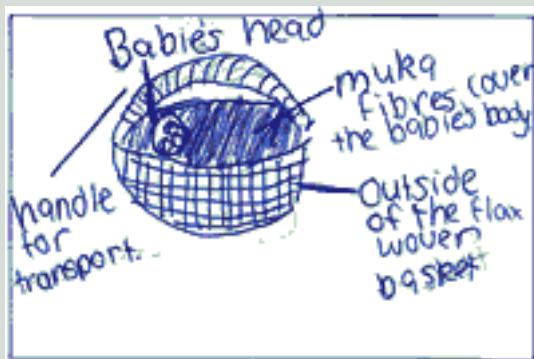
Keeping Babies Warm

WHAT THE WORK SHOWS

Andy's work shows a systematic, planning approach to an investigation into ways of using flax fibres to keep a baby warm. He explains his planning and justifies his planning board decisions, using the knowledge and understanding he gains from the exploratory activities.

Andy's comments about his drawing

"My drawing was done to show the baby warm and comfortable, fibres with access to the air as well as portable. Warmth was the most important aspect for the baby's health. I was looking for the **flowing** properties in the fibres: warm, durable, didn't break up, supple (not rigid and strong)."



Andy's drawing of the baby in the flax basket

- 1) warmth*
- 2) softness
- 3) flexibility
- 4) durability
- 5)

Andy's answer

Progress Indicator

Investigating in Science

Making predictions

Andy begins to *use his developing scientific ideas to make testable predictions.*

Using systematic approaches and science conventions

Using the planning board Andy *plans and carries out a systematic investigation to gather evidence to test his ideas.*

Progress Indicator

Developing and Communicating Scientific Understanding

Using scientific ideas in constructing explanations

Andy *constructs an explanation for an experience using appropriate scientific ideas* when answering the question (see Andy's comments about his drawing).

Using scientific vocabulary

Andy *uses a range of scientific terms appropriately* such as heat-retaining potential, durable, flowing properties (see Andy's planning board and comments about his drawing).

